

## Self-organized micro-structures of $\text{PrAlO}_3/\text{Al}_2\text{O}_3$ and $\text{PrAlO}_3/\text{Pr}_2\text{O}_3$

D. A. Pawlak, K. Kolodziejak, J. Kisielewski, T. Lukasiewicz, M. Malinowski,  
M. Kaczkan

D. A. Pawlak/Institute of Electronic Materials Technology, ul. Wolczynska 133, 01-919  
Warsaw, Poland.

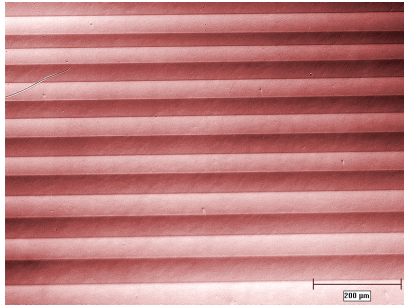


Fig. 1. Optical microscope image of the microtwin domains in  $\text{PrAlO}_3$  single crystal.

The self-organized dielectric micro-structures of  $\text{PrAlO}_3/\text{Al}_2\text{O}_3$  and  $\text{PrAlO}_3/\text{Pr}_2\text{O}_3$  will be presented. Their growth is based on directional solidification of binary eutectics by the micro-pulling down method. The microstructure will be compared with the microstructure of pseudo-periodic twin domains in  $\text{PrAlO}_3$  crystal grown by the Czochralski method, Fig. 1. One of the phases can be etched away selectively. The empty spaces could be filled with a metal giving the possibilities of using these structures as kind of metamaterials. The spectroscopic properties of the microstructures will be presented.

[1] D. A. Pawlak, T. Lukasiewicz, M. Carpenter, M. Malinowski, R. Diduszko, J. Kisielewski, submitted to J. Cryst. Growth